HALIBURTON PROJECT

SPECTRUM No. SE-001

FINAL REPORT

McCone County

MONTANA
ABANDONED MINE
RECLAMATION BUREAU

June 26th, 1991

SPECTRUM ENGINEERING

Billings, Montana

FINAL REPORT

HALIBURTON PROJECT

SPECTRUM No. SE-001

McCone County, Montana

Site Located in Northeastern Montana

Haliburton Mine

T27N, R48E, South ½ of Section 33

June 26th, 1991

Spectrum Engineering
Billings, Montana

TABLE OF CONTENTS

HALIBURTON PROJECT FINAL REPORT

1. INTRODUCTION

1.1 Project Description

The Haliburton Project consists of one abandoned coal mine site located in the northeast corner of McCone County 7 miles south of Wolf Point and about 7900 feet south of the Missouri River. The need for this project was to protect human health and safety caused by a dangerous mine opening and environmental degradation caused by eroding coal slack piles.

1.1.1 Location and Access

The mine site is 200 feet east of paved Highway 13 running from Circle to Wolf Point in Township 27 North, Range 48 East, South ½ of Section 33. The latitude is 48° 02.8' and the longitude is 105° 31.6'. The mine is found on the 7½ minute USGS quadrangle named Macon. The site is totally within McCone County.

Access to the site is by exiting Montana Highway 13 by mile marker 45. The coal slack pile is visible from the road. The reader is referred to the Site Map contained in the bid package at the back of the final report (ATTACHMENT 3).

1.1.2 Land Ownership

The site is owned by Frank Hanks, Box 3060, Wolf Point, Montana 59201 at phone 406/525-3393.

1.1.3 History

Little is known of the history of this site. Apparently it was a commercial mine which was mined up to around 1950. The landowner reports that a Mr. Baldwin operated the mine and still resides two miles west of the site.

1.2 Project Objectives

The project goal was to close a dangerous mine opening and prevent environmental degradation caused by eroding coal slack piles.

2. RESPONSIBLE PARTIES

2.1 Contractor

The successful low bidder was Pine Street Inc. Their address is shown below:

Pine Street Inc.
P.O. Box 736
Glendive, Montana 59330
Phone: 406/365-4576
MT Contractor's License: 7862-A

2.2 Reclamation and Engineering Plan

Spectrum Engineering was assigned the responsibility of preparing the reclamation and engineering specifications prior to contractor selection. Plans conforming to the general requirements were formulated in the field to meet specific conditions.

Spectrum's address is shown below:

Spectrum Engineering
3302 4th Avenue North
Billings, Montana 59101
Phone: 406/259-2412

2.3 Quality Control Inspection

Spectrum Engineering performed the quality control inspection. The project engineer and inspector was Dave Murja.

2.4 AMRB Coordination

The AMRB Project Manager was Ed Gensler, Montana Department of State Lands, Abandoned Mine Reclamation Bureau.

3. CHRONOLOGICAL LISTING OF EVENTS

3.1 Pre-Bid Conference

There was no pre-bid conference held due to the size of the job. The Contractors were contacted by phone and given the chance to visit the site on their own.

3.2 Bid Date

The bid opening date was June 3rd, 1991 at 2:00 p.m. in Spectrum Engineering's office.

3.3 Lowest Bids

Five contractors were solicited for bids on this project. Only 4 bidders responded with bids ranging from $4,200.00 to $5,355. The bid tabulations is presented below.

BID ITEM	ENGINEER ESTIMATE	PINE STREET GLENDIVE	SCHILLINGER VIDA No. 3029B	PRAIRIE SAND/GV WOLF POINT No. 0-9714C	FRANZ CONS. SIDNEY No. 7864A
MOBILIZATION	500.00	1000.00	250.00	240.00	1850.00
BACKFILL SHAFT	100.00	100.00	120.00	100.00	155.00
CLOSE INCLINED SHAFT	400.00	200.00	300.00	300.00	500.00
COAL SLACK DISPOSAL	2400.00	2100.00	2000.00	2080.00	1300.00
FERT, SEED & MULCH	800.00	400.00	1500.00	1500.00	1200.00
DEBRIS CLEANUP	200.00	400.00	200.00	712.00	350.00
TOTAL BID	4400.00	4200.00	4370.00	4932.00	5355.00

3.4 Contract Award

The contract was awarded to Pine Street Inc. who was low bidder. They also performed all the work. The prime contractors address is shown under 2.1 Contractor above.

3.5 Contract Agreement

The Contract Agreement was signed June 4th. The work was to start no later than June 10th and be completed within 5 calendar days. The scheduled work completion was June 12th, 1991.

3.6 Construction Start-up

The Contractor started mobilizing his equipment to the site on June 10th, 1991.

3.7 Change Orders

There were no change orders written for this project.

3.8 Work Stoppages

There were no work shut-downs on this project.

3.9 Requests for Payment

There was one payment request on this project. Pay Request 1 was for the entire job starting June 10th through job completion on June 12th, 1991. The amount completed for this pay request was $ 4,200.00.

3.10 Substantial Completion

The date of Substantial Completion was June 12th, 1991.

3.11 Final Completion and Approval

The Final Completion date is one year from the Substantial Completion date or June 12th, 1992.

3.12 Final Payment

Final payment was made to the Contractor on June 26th, 1991. A copy of the payment request has been included in ATTACHMENT 1.

4. CONSTRUCTION

4.1 Description of Project Plan

The goal of this project was to backfill or close an inclined shaft and an air shaft. The reclamation also included debris removal and burial and disposal of one coal slack area and one coal slack pile. Work descriptions are provided with the As-Built Drawings and the Bid Package which have been included as attachement to this report.

4.2 Major Equipment List

Type	Year	Make/Model	Size/Horsepower	No. on Job
Backhoe	1977	Case 680 E	80 hp	1

4.3 Contractor Employees

The number of contractor employees on the job was 2 counting the Contractor himself.

4.4 Construction Activities

Pine Street Inc. moved their equipment to the Haliburton site the morning of June 10th, 1991 and started work that afternoon. The air shaft had been substantially backfilled by the landowner and was capped earth. A small area which had been covered with coal slack was excavated and covered with earth. Debris was collected and buried in a pit. An inclined shaft was probed, found substantially caved 25-30 feet from the portal, and backfilled. Coal slack was excavated from a large pile and buried in a series of trenches. The clayey soil excavated from the trenches was spread over the coal slack removal and disposal areas as a top covering. Disturbance was confined to areas which were covered with coal slack. All disturbance areas were fertilized, seeded and mulched.

4.5 Quantities Used

The entire job was bid on a lump sum basis. This made the administration of the contract straight-forward. No disputes were raised by the Contractor about the estimated quantities being wrong.

Item	Amount	Unit Cost
Close Mine Openings	2 each	$ 150.00 / opening
Seed, Fertilize, Mulch	0.32 acres	$ 1250.00 / acre
Coal Slack Disposal	550 cu yd	$ 3.64 / cu yd

5. PAYMENT REQUESTS

5.1 Pay Request

One pay request was processed for this project as addressed under Section 3.10 above. A copy of this pay request has been included in ATTACHMENT 1.

5.2 Cost per Site

Site Name	Disturbed Acres	Cost/Acre	Total Project Cost
Haliburton	0.32	$13,125.00	$ 4,200.00

5.3 Total Project Cost

The construction cost for the project was $4,200.00 The original bid was $4,200.00 with no change orders issued. The total engineering cost for the project was $4499.01 yielding a total project cost of $8,699.01. An analysis of the engineering costs versus construction costs is presented in ATTACHMENT 2.

6. PROJECT SUMMARY

6.1 Summary of Project

The project went as scheduled with the few modifications shown on the As-Built Drawing and explained in the accompanying notes. The primary change was the movement of the disposal area to take advantage of the backhoe.

6.2 Site Condition after Completion

The slack pile was buried and the incline backfilled. However, the abandoned workings of the coal mine still remain beneath a cultivated field. Some of these workings may be within 50 feet of the surface. Due to the lack of topsoil for reclamation, a clayey textured soil was spread over the regraded areas.

6.3 Maintenance or Follow-up

The site should be checked next spring for revegetation success. The backfilled shafts should be checked for settling or collapse.

6.4 Construction Bid Package

The bid package in its entirety is located in Attachment 3 at the back of the final report. This plan represents the reclamation engineering design (the plan from which the contractors bid the work).

6.5 As-Built Drawings

The bid package (construction) drawing was taken and modified to reflect the as-built reclamation construction. This is located in Attachment 3 right before the photographs and directly behind the construction bid package.

7. COMMENTS/SUGGESTIONS

Due to the size of this project, we attempted to utilize a streamlined planning and bidding process. Bids were solicited from a select number of prospective contractors. In addition, the contractor then completed the work as a subcontractor to Spectrum Engineering.

8. PHOTOGRAPHS/SLIDES

8.1 Listing

The description of the photographs taken to document the work performed is found at the back of the final report under Attachment 5. Picture numbers 6 and 7 show the equipment used to execute the work. Numbers 1 through 5 are views of the site prior to construction. Numbers 31 through 36 are views of the site after construction. The numbers on each picture correspond to the listing which preceeds the photographs. The two bound final reports contain photographs and the unbound report contains the slides.

ATTACHMENT 1

PAYMENT REQUEST

STATEMENT

FROM Pine Street Inc.

Box 736

Glendive, Mont. 59330 June 17 19 91

TO Spectrum Engineering

ADDRESS 3302 4th Avenue North

CITY Billings, Mont. 59101

TERMS

		Bid work on the Haliburton AML project.			$4,200.00	

ATTACHMENT 2

ANALYSIS OF CONSULTANT COSTS INCURRED

HALIBURTON PROJECT FINAL REPORT

ANALYSIS OF CONSULTANT COSTS INCURRED
FOR THE MONTANA DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU
SPECTRUM PROJECT NUMBER: SE 91-001
HALIBURTON PROJECT

DATE OF PREPARATION: JUNE 21ST, 1991

ENGINEERING SERVICE	AMOUNT
DESIGN ENGINEERING:	
1991 CONTRACT	$1,595.40
SUBTOTAL DESIGN ENGINEERING COST:	$1,595.40
CONSTRUCTION ENGINEERING AND PROJECT ADMINISTRATION COST:	
1991 CONTRACT	2,903.61
SUBTOTAL CONSTRUCTION ENGINEERING COST:	$ 2,903.61
PROJECT ENGINEERING COST:	$4,499.01
CONSTRUCTION COST:	$4,200.00

PERCENTAGE ENGINEERING FEES TO CONSTRUCTION COST:	
DESIGN ENGINEERING/CONSTRUCTION COST	38.0%
CONSTRUCTION ENGINEERING/CONSTRUCTION COST	69.1%
TOTAL ENGINEERING COST/CONSTRUCTION COST	107.1%

REMARKS: Services provided included landowner contact and consent, basic engineering and reclamation design, bid document preparation, construction staking, contract administration, quantity accounting, full time construction/reclamation inspection and final report preparation and project close-out.

ATTACHMENT 3

CONSTRUCTION BID PACKAGE

INVITATION FOR BID

HALIBURTON AML PROJECT

McCONE COUNTY, MONTANA

Sealed bids will be received up to 2:00 P.M. on Monday June 3rd, 1991.

Return bids to:

Spectrum Engineering
3302 4th Avenue North
Billings, MT 59101

SECTION I

1.1 INVITATION FOR BID
SPECTRUM ENGINEERING

HALIBURTON PROJECT
SPECTRUM SE-001

Sealed bids will be received, publicly opened and read aloud at 2:00 p.m. on Monday, June 3rd, 1991, by Spectrum Engineering in their office at 3302 4th Avenue North, Billings, Montana for the HALIBURTON PROJECT, McCone County, Montana, SPECTRUM SE-001, and after this hour no bids will be accepted.

Bids will be received for one General Contract. The work will consist of, but not be limited to, providing all labor, materials, earthwork, and incidentals necessary to backfill one partially filled shaft, remove debris and backfill one inclined shaft, dispose of all debris, excavate a disposal pit and bury all coal slack and revegetate all disturbed areas.

The project site is located 7 miles south of Wolf Point within 200 feet of paved Highway 13 running from Circle to Wolf Point in Township 27 North, Range 48 East, South 1/2 of Section 33, McCone County, Montana.

Bids shall be submitted on the form provided with the Contract Documents. Contract Documents have been mailed to the respective bidders.

Bids shall be accompanied by proof of Worker's Compensation Coverage or Proof of Exemption.

The Contractor shall comply with all fair labor practices and must meet the requirements of State and Federal statutes.

Spectrum Engineering reserves the right to reject any or all bids, and to waive any irregularities or informalities in the bidding. No contract shall be awarded if all bids exceed $5,000.00.

SECTION I

1.2 INSTRUCTIONS TO BIDDERS

HALIBULTON PROJECT
ABANDONED MINE RECLAMATION BUREAU
SPECTRUM SE-001

1. BIDS

a. All bids must be submitted on forms supplied herein and shall be subject to all requirements of the Contract Documents including the Drawings and these Instructions to Bidders. All bids must be regular in every respect and no interlineations, alterations, or special conditions shall be made or included in the Bid Form by the Bidder.

b. Each Bid Proposal shall include the entire bid package, drawings and specifications booklet. The Bid Proposal shall be enclosed in an envelope which shall be sealed and clearly addressed as follows:

Addressed to: Spectrum Engineering
3302 4th Avenue North
Billings, Montana 59101

Mark lower left-hand corner
of your envelope as follows: SPECTRUM SE-001
Bid Date: June 3rd, 1991

c. Bids will be written in ink and/or typewritten on bid forms furnished herewith.

d. Erasures or alterations must be initialed by the Bidder in ink.

e. Bids must be signed by a proper representative of the firm submitting the bid. Proper representatives are the principal of a singly owned firm, a principal of a partnership firm, and an officer or authorized agent of an incorporated firm.

f. Any Bidder may modify his bid by telegraphic or faxed communication at any time prior to the scheduled closing time for receipt of bids. The communication should not reveal the bid price but should provide the addition or subtraction from the original proposal. Bid modifications must be verified by a signed document in writing, submitted by mail. This written confirmation is to be received within two working days following the bid opening or no consideration will be given to the modification. Bid modifications shall be directed to voice phone (406) 259-2412 or fax phone (406) 259-1456.

3. CONDITIONS OF WORK SITE

a. Each Bidder should visit the site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor, and should fully inform himself as to the facilities involved, and the difficulties and restrictions attending the performance of the Contract. Bidders are cautioned that special site constraints may require special construction allowances and techniques. In submitting a bid for this project, the Bidder is thereby acknowledging that he is capable of performing the specified work on the site. The Bidder should thoroughly examine and familiarize himself with the Drawings, Technical Specifications, and all other Contract Documents, and shall verify the accuracy of the estimated quantities in the Bid Schedule. Failure to do so will not relieve the successful Bidder of his obligations to carry out the provisions of this Contract.

b. The submission of a Bid will constitute a representation of familiarization by the Bidder. There will be no subsequent financial adjustment for lack of such familiarization.

4. WITHDRAWAL OF BIDS

Bids may be withdrawn on written, telegraphic, or faxed request dispatched by the Bidder in time for delivery in the normal course of business to the time fixed for opening; provided that written confirmation of any telegraphic or faxed withdrawal over the signature of the Bidder is submitted by mail. This written withdrawal is to be received within two working days following the Bid opening or no consideration will be given to withdrawal of the Bid. No bids shall be withdrawn for a period of 30 days after the scheduled closing time for receipt of bids.

5. METHOD OF AWARD

a. The lowest qualified Bidder shall be the Contractor whose total base bid (if within the funds available of $5,000.00) shall constitute the lowest aggregate bid for the work.

b. If such lowest base bid exceeds such funds, Spectrum may reject all bids.

c. Spectrum reserves the right to reject any or all bids or to waive any irregularity or informality in any bid received.

d. All contracts will be awarded in conformance with the laws of the State of Montana, including preference for resident Contractors. Pursuant to Section 18-1-102, Montana Code Annotated, the State of Montana, in awarding any contracts for materials, supplies, equipment, construction, repair, and public works of all kinds, shall award such contract to the lowest responsible Bidder who is a resident of the State of Montana and whose bid is not more than 3% higher than the lowest responsible Bidder who is a non-resident of this state.

6. TIME FOR RECEIVING BIDS

a. Bids received prior to the stated hour of opening will be securely kept sealed. The officer whose duty it is to open them will decide when the specified time has arrived, and no bid received thereafter will be considered.

b. Bidders are cautioned that while telegraphic or faxed modifications of Bids may be received, such modifications, if not explicit and if in any sense subject to misinterpretation, shall make the bid so modified or amended subject to rejection.

7. OPENING OF BIDS

At the time and place fixed for the opening of bids, the Owner will cause to be opened and publicly read aloud every bid received within the time set for receiving Bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

8. PREBID CONFERENCE

No prebid conference will be held.

9. NOTICE TO PROCEED

The Notice to Proceed will normally be issued within 5 days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual written agreement between the Owner and Contractor.

10. LANDOWNER CONTACT

The landowner, Frank Hanks, shall be contacted and his permission obtained prior to any site visitation. He resides in Wolf Point and can be contacted by calling: 525-3393.

SECTION II

2.1 PROPOSAL

HALIBURTON PROJECT

SPECTRUM SE - 001

Spectrum Engineering
3302 4th Avenue North
Billings, MT 59101

Gentlemen:

The undersigned, having familiarized himself with the conditions of the work and the contract documents, agrees to furnish all labor, materials, equipment and services necessary to complete all general construction work, as bid herein, for a project entitled **"HALIBURTON PROJECT"** in accordance with the contract documents, including all Addenda.

The undersigned Bidder hereby agrees to commence work under this contract on the date to be specified in a written Notice to Proceed from the Owner and to fully complete the project (including all alternates that may be a part of the contract) within **ten (10)** consecutive calendar days thereafter as stipulated in the Specifications. Time is of the essence in completing this project.

Bidder further agrees to pay as liquidated damages the sum of Four Hundred Dollars ($400.00) for each consecutive calendar day thereafter.

The following quantities are for informational purposes only and each Bidder shall be responsible for inspecting the proposed work site and estimating his own quantity takeoffs. Spectrum Engineering does not guarantee the accuracy of any estimated quantities presented in the bid document or in the site plan.

The undersigned Bidder understands that the quantities stated herein are approximate only and offers to do the work whether the quantities are increased or decreased. In case of a discrepancy between the amounts and totals, as submitted, the corrected total figures based on the unit price shall hold.

The undersigned Bidder agrees to provide or perform as follows:

SECTION II

2.1 PROPOSAL (cont.)

Item No.	Estimated Quantity	Unit	Description	Unit Price	Total Price
1.	1	LUMP SUM	MOBILIZATION	XXXX	$
2.		LUMP SUM	BACKFILL SHAFT	XXXX	$
3.	1	LUMP SUM	CLOSE INCLINED SHAFT	XXXX	$
4.	1	LUMP SUM	COAL SLACK DISPOSAL	XXXX	$
5.	1	LUMP SUM	FERTILIZE, SEED & MULCH	XXXX	$
6.	1	LUMP SUM	DEBRIS CLEANUP	XXXX	$

TOTAL: $ _____

_____

(Price in Words)

SECTION II

2.1 PROPOSAL (cont.)

The foregoing unit bid prices shall include all labor, materials, equipment, overhead, profit, insurance, and all incidentals required to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of 30 calendar days after the scheduled opening time.

Bidder hereby acknowledges receipt of the following Addenda, which have been considered in preparation of this Bid:

Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____
Addendum No.	_____	Dated	_____

The undersigned Bidder acknowledges that this information, which was developed by the Engineer, is for design purposes only. The Contractor shall be solely responsible for information required to bid the project. By signing this Proposal, the Contractor acknowledges that he has adequate information, independently verified by the Contractor, to prepare and offer this bid.

Firm Name: _____

By: _____
Signature

Title: _____

Business Address: _____

_____

Mont. Contractor's License No.: _____

Telephone No.: _____

SECTION III

SPECIAL PROVISIONS

1. PROJECT DESCRIPTION

The work under this contract shall be performed at one project area located adjacent to Highway 13 and 7 miles south of Wolf Point, Montana. Access to the site can be determined by studying the Vicinity Access Map and Site Plan. The project goal is to perform hazard abatement work on two mine openings resulting from the past coal mining activities. The major items of work include backfilling, coal slack disposal, debris cleanup and revegetation.

An abondoned coal mine lies under this site. Bidders should be aware that underground openings may be encountered without warning. All Bidders should satisfy themselves as to the construction conditions by personal examination of the site of the proposed work and any other examination and investigation that they may desire to make as to the nature of the construction and the difficulties to be encountered.

Please refer to the Haliburton Site Plan, the accompanying notes, the standard specifications, and the site photograph which follow this section.

2. PROJECT-RELATED CONTACTS

(a)	Engineer: (Source of Technical and General Information)	Spectrum Engineering 3302 Fourth Avenue North Billings, MT 59101 Telephone: 406/259-2412 Contact: Dave Murja, Don Sutton or Gary Rome
(b)	Landowner: (Consent)	Frank Hanks Wolf Point, MT Telephone: 406/525-3393
(c)	Resident Project Representative: (Construction Observation)	Spectrum Engineering's Construction Inspector

3. SOIL AMENDMENTS, SEEDBED PREPARATION, AND SEED MIX

(a) Seedbed Preparation. Prior to executing the seeding, fertilizing, and mulching, the seedbed at all sites shall be prepared so these items can most efficiently be completed in conformance with the Technical Specifications. The seeding, fertilizing, and mulching work items shall be executed only after the seedbed has been accepted by the Engineer or Resident Project Representative.

(b) Seeding, Fertilizing, and Mulching. All areas at the sites disturbed in the execution of the work shall be seeded with the Grass Mix, fertilized, and mulched. Other areas which are disturbed by the Contractor's operation will also require seeding, fertilizing, and mulching. Any such disturbed areas will be considered as site damage and will not be measured or considered for payment. The cost of this work shall be absorbed solely by the Contractor.

The Contractor shall accomplish this work in accordance with Technical Specifications 320.00 Fertilizing and Seeding and 330.00 Mulch. These two Technical Specifications will be followed as well as the provisions contained herein.

(1) Fertilizer. Fertilizer shall be applied at the rates specified below. Fertilizer shall be applied to the prepared seedbed prior to seeding or mulching and shall be blended with the topsoil or cover soil as called for in the Technical Specifications, or concurrently with the seed (as "no-till" drills allow).

All areas shall be fertilized with an inorganic chemical fertilizer with the following nutrients:

Nitrogen (Elemental)	22.5 ± 1.0 lbs/acre
Phosphorus (P_2O_5)	56.0 ± 1.0 lbs/acre
Potassium (K_2O)	14.0 ± 1.0 lbs/acre

All required fertilizer certificates shall be provided to the Engineer a minimum of three days prior to fertilizing. The certification shall include the guaranteed analysis of the fertilizer(s) stated in terms of the percentages of nitrogen (N), available phosphorus (P_2O_5) and potash (K_2O) in that order.

(2) Seed Certification. Seed certifications and documentation as required by Technical Specification 320.00 shall be submitted to the Engineer at least three days prior to any seeding. The Contractor shall also submit a copy of the bill or other documentation from the seed supplier showing actual bulk weights of the individual seed types combined in the mix.

(3) Seeding. The following application rates for seed are based on the broadcast or hydraulic seeding method. When the drill seeding method is used, the application rates listed below would be half of the stated amounts.

Common	Scientific	Variety	(lbsPLS/acre)*
Broadcast Seeding Mix:			
Beardless wheatgrass	Agropyron inerme	Whitmar	6.0
Western wheatgrass	Agropyron smithii	Rosanna	6.0
Slender wheatgrass	Agropyron trachycaulum	Primar	6.0
Big bluegrass	Poa ampla	Sherman	1.0
Indian ricegrass	Oryzopsis hymenoides	Nezpar	6.0
Yellow sweetclover	Melilotus officinalis		1.0
Total			26.0

*Pounds pure "live seed" per acre.

(4) Tracking. Tracking will be required only on areas where mulch tilling cannot be accomplished.

(5) Mulching. The Contractor shall use Vegetative Mulch.

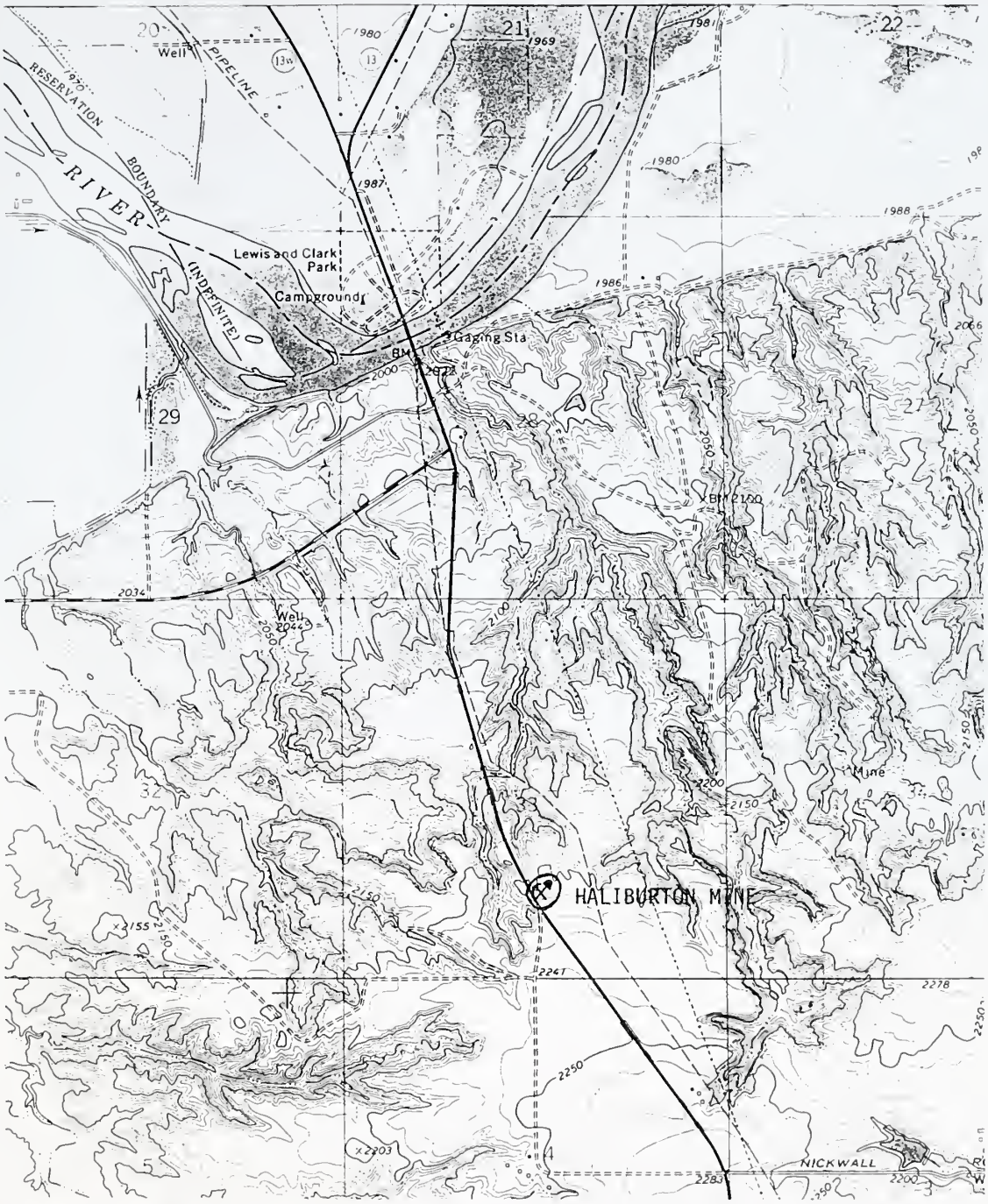
(a) Vegetative Mulch. A straw mulch shall be applied at a rate of 3,000 pound per acre in accordance with Technical Specification 330.00 Mulch in those areas which are to be seeded with the Grass Mix. Straw mulch shall be anchored by a mulch tiller (crimper).

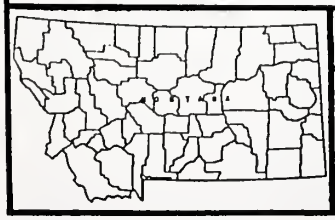
(b) Tackifier. Tackifier shall be applied with all hydromulched areas at the manufacturer's recommended rate of forty (40) pounds per acre for slopes flatter than 2:1 and eighty (80) pounds per acre for slopes 2:1 or steeper.

4. MEASUREMENT AND PAYMENT

(a) General. The project contract has one lump sum prices for the entire project.

(b) Incidentals. The bid items do not necessarily name all the incidental items required by the Contract Documents to complete the work. The cost of all such incidentals shall be included in the various related bid items. Final payment will not be made until all of the work is complete.





STATE OF MONTANA — DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU—RECLAMATION DIVISION

SITE MAP

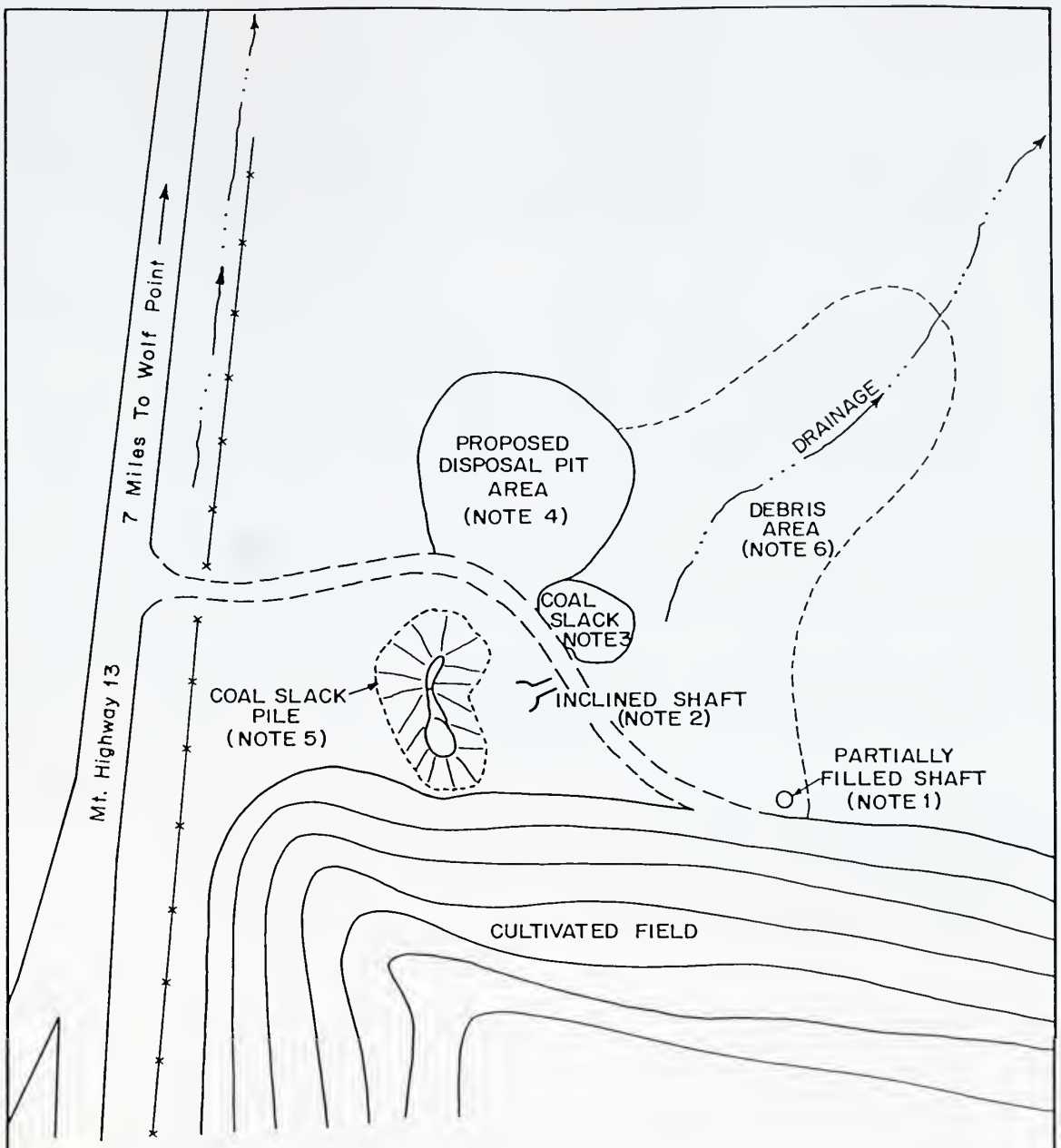
SITE HALIBURTON

N

McCone COUNTY, MT; TOWNSHIP 27N RANGE 48E

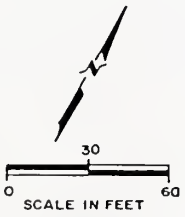
SECTION(S) 33

MAP SCALE: 1" = 2000' U.S.G.S. QUAD SHEET Macon



HALIBURTON SITE

PROPERTY OWNER: FRANK HANKS, et al.
PHONE: 525 - 3393



Spectrum Engineering Billings, Montana May 1991	STATE OF MONTANA DEPARTMENT OF STATE LANDS HALIBURTON SITE DRAWING NO.

NOTES ACCOMPANYING HALBURTON SITE PLAN

NOTE 1: Backfill this partially filled shaft with material borrowed from the disposal pit area or from the excavation of the inclined shaft. The finished surface will be graded as a small mound extending 2 feet above the normal grade over the opening and sloping to the ground at 2½ H:1 V. The finished surface will be revegetated per the seeding specifications.

NOTE 2: This inclined shaft has been plugged with debris. All debris will be removed from this opening. If the inclined shaft is found to be open behind this debris, it will be plugged solid with coal slack, and earth. The plug will extend a minimum distance of 10 feet in from the brow. The outer 3 feet of the plug will consist of earth borrowed from the disposal pit area. The remaining portion of the plug will be coal slack. The contractor will be required to excavate around the portal as necessary to expose the opening and to facilitate the stowing of these materials.

If the inclined shaft is found to have caved behind the debris. This opening will be backfilled with earth borrowed from the disposal pit excavation. In either case the surface of the backfill will be graded to blend with the natural terrain and will be revegetated per the seeding specifications.

NOTE 3: This small area (approx. 200 $ft.^2$) is covered with less than 1 foot of coal slack. The coal slack will be removed and placed either in the inclined shaft or in the disposal pit. Six inches of earth borrowed from the disposal pit area will be spread over the area prior to revegetation.

NOTE 4: A disposal pit with dimensions adequate to accommodate the burial of all coal slack which cannot be stowed in the inclined shaft will be excavated in the area shown on the drawing. The coal slack must be covered with at least 18 inches of earth and topsoil. The contractor will be required to salvage and replace all topsoil covering this area. The finished surface in the disposal area will be graded to blend with the natural surface. The disturbed area will be revegetated per the seeding specifications.

NOTE 5: The coal slack pile, which ranges from 4 to 13 feet in height, will be completely removed from this area. This material will be placed in the inclined shaft and/or in the disposal pit and will be covered as previously described. The coal slack will be compacted in 12-inch layers as it is placed in the disposal pit. The contractor will provide water as necessary to optimize compaction. After the coal slack has been completely removed, six inches of earth borrowed from the disposal area will be spread over the area. This area will be revegetated as described in the seeding specifications.

NOTE 6: Debris from the inclined shaft and debris scattered within the outlined area will be collected and hauled to a waste disposal facility. The contractor may select to burn biodegradable materials and to bury the ashes and other non-biodegradable debris on site. Debris may not be placed in or adjacent to coal slack if the contractor selects to bury it on site.

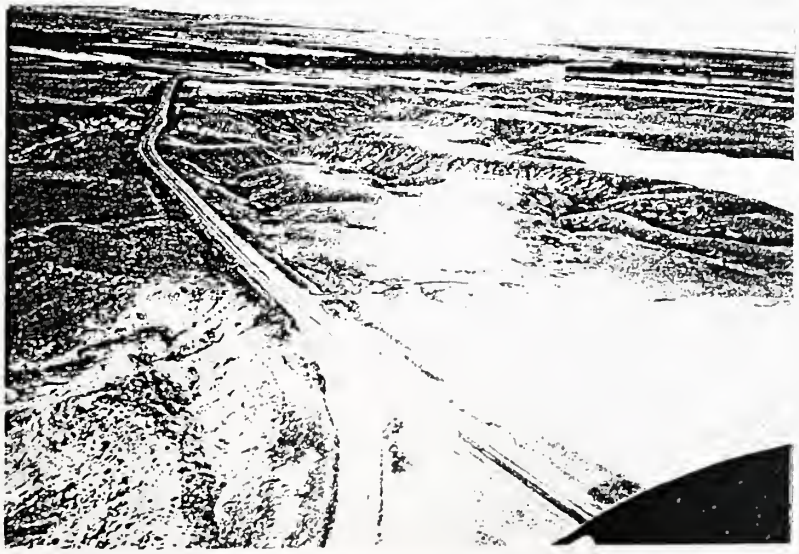
ESTIMATED QUANTITIES

REFERENCE		VOLUMES	REVEG. AREA
NOTE 1:	Shaft	15 yd^3	200 ft^2
NOTE 2:	Incline Shaft	80-130 yd^3	1000 ft^2
NOTE 3:	Coal Slack	50 yd^3	2000 ft^2
NOTE 4:	Disposal Pit Topsoil	150 yd^3	8000 ft^2
	Disposal Pit Earth	600 yd^3	
NOTE 5:	Coal Slack Pile	500 yd^3	3500 ft^2
NOTE 6:	Debris	10 pickup loads	
OTHER ASSOCIATED AREAS			2500 ft^2

Estimated Yardage Handled Assuming The Inclined Shaft Has Caved

REFERENCE	EXCAVATION	FILL
NOTE 1		15 earth
NOTE 2		80 earth
NOTE 3	50 slack	50 earth
NOTE 4	150 topsoil	150 topsoil
NOTE 4	600 earth	875 earth and slack
NOTE 5	500 slack	130 earth
	.....	.....
TOTAL	1300 cubic yards	1300 cubic yards


Haliburton



SUBSECTION 320.00: FERTILIZING AND SEEDING

320.01 GENERAL

A. DESCRIPTION - This work shall consist of ground surface preparation; furnishing, applying and incorporating fertilizer into the soil; executing Summer Erosion Control Procedure; furnishing and planting seed; mowing; tracking; and cleanup. The work includes permanent seeding.

B. CERTIFICATIONS

1. Indigenous Seed. Defined by MCA 80-5-101(4):

   "Indigenous seeds include the seeds of those plants that are naturally adapted to an area where the intended use is for revegetation of disturbed sites. These species include grasses, forbs, shrubs and legumes."

   The Contractor must supply the Engineer with all seed bag tags and a certification from the supplier stating that the seed complies with the Federal Seed Act and the Montana Seed Laws (MCA 80-5-101 through 305).

2. Fertilizer. Fertilizer shall be delivered in standard size bags of the manufacturer showing weight analysis and manufacturer's name, or in bulk quantities accompanied with written certifications from the manufacturer stating that the fertilizer supplied complies with applicable specifications.

320.02 MATERIALS

A. INDIGENOUS SEED - All seed shall comply with and be labeled in accordance with the Montana Seed Law. MCA 80-5-104(2) states...

"Indigenous seeds, as defined in 80-5-101, in amounts of 1 pound or more, whether in package or bulk, must be labeled with the following information "

(a) . . . the statement "Labeled only for reclamation purposes";

(b) . . . lot number or other distinguishing mark;

(c) . . . the common name, genus, species and subspecies, when applicable, including the name of each kind of seed present in excess of 5%. When two or more kinds of seed are named on the label the label shall specify the percentage of each. When only one kind of seed is present in excess of 5% and no variety name or type designation is shown, the percentage must apply to seed of the kind named. If the name of the variety is given, the name may be associated with the name of the kind. The percentage in this case may be shown as "pure seed" and must apply only to seed of the variety named;

(d) state or county of origin;

(e) the approximate percentage of viable seed, together with the date of test. When labeling mixtures, the percentage viability of each kind shall be stated;

(f) the approximate percentage by weight of pure seed, meaning the freedom of seed from inert matter and from other seeds;

(g) the approximate percentage by weight of sand, dirt, broken seeds, sticks, chaff and other inert matter;

(h) the approximate total percentage by weight of other seeds;

(i) the name and approximate number of each kind of species of prohibited and restricted noxious weed seeds occurring per pound of seed;

(j) the full name and address of the person, firm or corporation selling the seed.

As listed in the Montana Seed Law, seed shall contain no "PROHIBITED" noxious weed seed. The seed shall contain no "RESTRICTED" noxious weed seed in excess of the maximum numbers per pound as specified by MCA 80-5-105 or as specified by the appropriate County Weed Board, whichever is more stringent.

The number of seed allowed per pound, for all other noxious weed seeds shown on the "restricted list" will be zero.

Seed shall be grown in the North American continent above 41 degrees north latitude. Known varieties whose origin is above the 41st parallel but grown below are acceptable. All seed shall be a standard grade adapted to Montana conditions. Seed which has become wet, moldy or otherwise damaged will not be accepted.

Calculations of pure "live seed" may be made on the basis of either a germination test or a tetrazolium test in addition to the purity analysis. Seed shall be applied on a pure "live seed" basis. The quantity of pure "live seed" in a 100 lb. container shall be determined by the formula: 100 multiplied by germination percentage and this product multiplied by the purity percentage. (For example, if the seed is 85% pure and test 90% germination, then a 100 lb. container would contain 76.5 lbs. of pure "live seed".)

When legumes are seeded, inoculants specified by the Special Provisions shall be used.

B. FERTILIZER - Fertilizer shall be a soluble commercial carrier of available plant food element or combination thereof. The fertilizer to be used on the project shall supply the quantities of available chemical elements stipulated in the Special Provisions or on the Drawings. The fertilizer shall be in uniform composition and in good condition for application by suitable equipment. It shall be labeled with the manufacturer's guaranteed analysis as governed by applicable fertilizer laws. Any fertilizer which becomes contaminated or damaged, making it unsuitable for use, will not be accepted.

C. WATER - Water used for seeding shall be of irrigation quality and free of impurities that would be detrimental to plant growth.

320.03 CONSTRUCTION METHODS

A. GENERAL - Areas to be seeded and fertilized shall be completed, in reasonable conformity, to specified line and grade prior to seeding and fertilizing and approved by the Engineer

It is necessary, insofar as it is practicable and feasible, as determined by the Engineer, that the seedbed surface, at the time of application of seeds, not be excessively wet, snow-covered, or frozen and be reasonably free of large lumps, clods, and impervious crusts of dirt; that there be no appreciable areas of loose soils which can feasibly be compacted; that the surface, to a depth of approximately 4", not be so tightly compacted that seed cannot begin growth. The Contractor shall treat such areas, as required by the Engineer, to attain, as nearly as practicable, the condition described.

If seeding is hampered due to standing vegetation, the vegetation shall then be mowed and left lay after seeding. Mowing shall be done, where terrain permits, with equipment using a cutting blade which rotates in a plane parallel to the ground. Whether alive or dead, the vegetation shall be removed if it will prevent good seeding practice.

Excessively tight or compacted soils shall be loosened to the minimum depth of 4 inches. Discing, harrowing, or tilling of the soil shall be done at right angles to the natural flow of water on the slopes, unless otherwise approved by the Engineer. Compaction of the soil when required shall be performed by equipment which will produce a uniform rough textured surface ready for seeding and mulching. Compacting of loose soils may be required by the Engineer.

Existing structures and facilities shall be adequately protected and any damage done by the Contractor shall be repaired or adjusted to the satisfaction of the Engineer.

B. APPLICATION OF FERTILIZER - Fertilizer shall be applied to the accepted seedbed surface at the rate as specified in the Special Provisions. Mechanical or hydraulic methods of application are acceptable so long as a uniform application at the specified rate is accomplished. Fertilizer shall not be applied within 5 days of the time of spoils material lime application if no topsoil covers spoils material. Fertilizer shall be applied prior to seeding. The application method is subject to approval by the Engineer.

The fertilizer shall be incorporated into the soil by discing, raking, or shallow plowing to the full depth of the topsoil or to a maximum depth of 6 inches, whichever is less. Exceptions will be made for seed drills that are capable of incorporating the fertilizer and seed directly into the seedbed. In no instance shall subsoil be incorporated into the seedbed as a result of this operation. Fertilizer shall be incorporated with equipment operated at right angles to the slope of the land.

C SEED DISTRIBUTION

1. General. Seed shall be applied to the conditioned seedbed no longer than 48 hours after the seedbed has been conditioned. The method of seeding will be as called for in the Special Provisions.

   Broadcast or hydraulic seeding methods shall not be used during adverse weather as determined by the Engineer.

   The applied seed, regardless of the method of application, shall not be covered by a soil thickness greater than 1/2-inch in depth.
   The basic rate of seed application will be described in the Special Provisions.

2. Seeding by Drill. Seeding equipment used for applying grass seed must be designed, modified or equipped to regulate the application rate and planting depth of grass seed. If equipment for sowing cover crop seed is not equipped with press wheels, the seed shall be compacted with a cultipacker immediately after the ground has been drilled. Seed must be uniformly distributed in the drill hopper during the drilling operation. Acceptable drills are: custom seeders, furrow drills, disc drills, no till drills or other drills approved by the Owner. All grass establishment equipment shall be operated normal to the slope drainage.

   Planting depth shall be regulated by depth bands or coulters. The drill box shall be partitioned by dividers no more than 24 inches apart, in order to provide for more even distribution on sloping areas. A drill shall be no wider than the width of the area over which it is to operate.

   The rows of planted seed shall be a maximum of 8 inches apart and shall be at right angles to the natural slopes.

3. Broadcast Seeding. Seeding by hand or mechanical broadcasting will be permitted on areas inaccessible to drills or impractical to seed by other prescribed methods. Broadcast seeding requires the approval of the Engineer.

4. Hydraulic Seeding. Hydraulic seeding equipment may be used. The seeding Special Provisions will indicate which slopes require hydraulic seed coverage. Seed and mulch will be applied in separate and distinct operations except for the following:

   When using the hydraulic seeding method, the Contractor must provide 1 pound of wood fiber or organic mulch per each 3 gallons of water in the hydraulic seeder as a cushion against seed damage. The mulch used as a cushion may be part of the total required mulch with the remainder applied after the seed is in place.

   When hydraulically applying mulch in a separate operation, the Contractor may mix the seed with the fertilizer if his hydraulic seeding equipment is capable of uniformly mixing water, fertilizer, and seed - in that order - and power blowing or spraying the mixture uniformly over the seedbed. THIS OPTION MAY ONLY BE APPLIED ON SLOPES STEEPER THAN 2:1. After blending, the slurry shall be applied to the seedbed within

45 minutes after the seed has been added to the water/fertilizer mixture. If the slurry cannot be applied within the specified 45 minutes, it shall be fortified, at no cost to the Owner, with the correct ratio of seed to the remaining slurry and a new 45-minute time frame established for applying the fortified mixture.

The Contractor will be required to use extension hoses to reach the extremities of slopes.

The Contractor shall remove any equipment tracks on the seedbed prior to final mulching. The Contractor shall use a rake, small harrow, or other acceptable means to remove the tracks.

D. TRACKING - All seeded and fertilized areas may or may not require tracking as noted in the Special Provisions. Tracking shall be accomplished using a tracked vehicle equipped with grousers sufficient to groove the surface to at least 1/2-inch. The tracking vehicle shall be operated so as to completely cover the surface with grouser marks. All grousers marks shall run perpendicular to the natural slopes. The tracking vehicle shall be operated alternately between forward and reverse on each pass to eliminate damage to the seedbed resulting from 180 degree skid turns.

If the area is seeded by hydraulic methods, tracking of the slopes shall be done at such time when the surface has had sufficient time to dry. The length of time established will be at the discretion of the Engineer.

SUBSECTION 330.00: MULCH

330.01 GENERAL

A. DESCRIPTION - This work shall consist of covering and processing specified seeded areas with a mulch of the stipulated materials.

B. SUBMITTALS - The following submittals are required in accordance with the Supplementary Conditions:

- Manufacturer's specifications and material content for mulch products.
- Manufacturer's recommended application methods and rate.

330.02 MATERIALS

A. GENERAL - Mulching materials used on the project shall be those stipulated in the Special Provisions or stipulated as items in the Bid Proposal and described hereafter.

1. On projects which require a specific mulch, that type will be shown on the Bid item, i.e., "Vegetative Mulch" or "Wood Fiber Mulch", and the type specified will be the only type accepted for use.

2. On projects which can be mulched equally well by any one of several types, the Bid item will be "Mulch" and the Special Provisions will specify the types acceptable. The Contractor will have the option of selecting which one of the specified types he will use. However, once selected, only one type of mulch will be used throughout the project.

B. VEGETATIVE MULCH - This type of mulch material shall be composed of grass hay, wheat straw, rye straw, or barley straw, in that order of preference.

1. Grass Hay. This type of mulch material shall be composed primarily of perennial grasses at least 10 inches The grass hay mulch shall contain greater than 70% grass by weight and shall not contain greater than 10% alfalfa, crested wheatgrass or yellow sweet clover. Grass hay shall be free of noxious weeds and will require written confirmation from the supplier, describing the hay mix.

2. Straw. This type of mulch material shall be clean grain straw, at least 10 inches shall be free of noxious weeds and shall not contain greater than 5% cereal seed by weight, i.e., seed heads. Written confirmation from the supplier will be required.

Chopped or ground material is not acceptable. The mulch material is not acceptable if it is musty, moldy or rotted, or if it contains seedbearing stalks of noxious weeds. It shall be free of stones, dirt, roots, stumps or other foreign material.

C. FABRICATED MULCH - Fabricated mulch acceptable to the Owner shall be made of jute, burlap or kraft paper string. It shall be a material made and commonly used for the purpose of preventing erosion of soil surfaces.

D. FABRICATED NETTING - Fabricated netting shall be made up of jute, burlap, kraft paper string or similar products. It may be made up on the project or prefabricated. The material must be approved prior to use, and if required, samples submitted. It shall be installed as determined by the Engineer.

E. WOOD FIBER MULCH - Wood fiber mulch shall consist of specially prepared wood fibers and shall be processed in such a manner that it will not contain any growth or germination inhibiting factors. Fiber shall not be produced from recycled material such as sawdust, paper, cardboard, or residue from pulp and paper plants. The fiber shall be dyed an appropriate color to facilitate visual metering during application. The mulch shall be of such a consistency that after being combined in a slurry tank with water and other approved additives, the fibers in the material will be uniformly suspended to form a homogeneous slurry. During application the material shall produce a mat-like net covering the grass seed. Wood fiber shall be supplied in packages. Each package shall be marked by the manufacturer to show the air-dry weight content. All mulch material must be acceptable to the Owner. If requested by the Owner, the Contractor shall submit a signed statement certifying that the material furnished has been laboratory and field tested and that it meets requirements and intents specified. Wood fiber mulch shall be as manufactured by Weyerhaeuser Company or approved equal.

F. PAPER FIBER MULCH - Paper fiber mulch shall consist of waste paper, containing at a minimum 85% by weight cellulose fiber. The material may not contain any germination- or growth-inhibiting factors nor particles of metal, plastic, or non-biodegradable materials. Organic matter (oven dry) as determined by ASTM D-586 shall be at least 95%, and pH range shall be between 5.5 and 7.5.

The fiber must be dyed with a non-toxic green tracer or non-toxic green dye may be added when slurrying with water. When slurried with water and fertilizer, the mulch shall remain in uniform, homogeneous suspension while agitated.

When applied by hydraulic means to the ground surface, the paper fiber mulch must form a strong moisture-retaining mat capable of holding seed in contact with the soil without smothering the seed.

Mulch must be supplied (dry) in individual packages, each clearly marked to show the air-dry weight and contents. In the packaged form, mulch moisture cannot exceed 15% by weight.

Paper fiber mulch shall be as manufactured by Thermoguard Co., or approved equal.

G. ORGANIC MULCH - Organic mulch shall be a neutral pH organic produce formulated from grass/straw by-products, and shall be processed specifically for mulching purposes. Processing shall be in such a manner that the organic mulch not contain stalks or seeds of noxious weeds or grasses, or any growth or germination inhibiting factors. To facilitate visual metering during application, a non-toxic water soluble green colored dye shall be added to the water. The mulch shall be of such a consistency that after being combined in a slurry tank with water, dye and other approved additives, the mulch material will be uniformly suspended to form a homogeneous slurry. Upon application the material shall produce a mat-like net covering the grass seed. Organic mulch shall be supplied in packages. Each package shall be marked by the manufacturer to show the air-dry weight content. All mulch material must be acceptable to the Owner. If requested by the Owner, the Contractor shall submit a signed statement certifying that the material furnished has been laboratory and field tested and that it meets requirements and intents specified.

H. TACKIFIER - Tackifier shall be a biodegradable organic formulation processed specifically for the adhesive binding of mulch. The tackifier shall uniformly disperse when mixed with water and not be detrimental to the homogeneous properties of the mulch slurry. Any tackifier which has been moisture damaged or damaged by other means will not be acceptable. Tackifier may

be added either during the manufacturing of the mulch or incorporated during mulch application.

Organic soil and mulch tackifier for use in hydraulically planting of grass seeds, flowers, or woody tree seeds, or stolon, either alone or in combination with fertilizer, wood fiber mulch and other approved additives, shall consist of specifically blended compatible hydrocolloids. Starch-based tackifiers are unacceptable.

The soil and mulch tackifier shall be supplied in easily disposable packages containing 5, 20, or 40 pounds of material having an equilibrium air-dry moisture content at time of manufacture of 8%, plus or minus 2%, with a minimum water-holding capacity of 6 1/2 times by weight of dry material.

The organic soil and mulch tackifier shall have the additional characteristics of hydrating and dispersing in circulating water to form a homogeneous slurry and remain in such a state in the hydraulic mulching unit, or adequate equal, with the specified, or other approved materials.

Soil and mulch tackifier shall be applied at a minimum rate of 40 pounds per acre on slopes 2:1 or flatter, or at 80 pounds per acre, or more on slopes steeper than 2:1, or at manufacturer's recommendations, approved by the Engineer.

When applied, the organic soil and mulch tackifier shall form a loose chain-like protective film, but not a plant inhibiting membrane, which will allow moisture to percolate into the underlying soil, while helping "stick" seeds, fertilizer and other specified materials to the soil surface during germination and initial seedling growth, after which the organic soil and mulch tackifier shall breakdown by microbial action.

330.03 CONSTRUCTION REQUIREMENTS

A. GENERAL - Mulch, when required, must be applied to seeded areas not more than 24 hours after seeding regardless of the type used. The Contractor does not mulch within 24 hours after seeding, the Contractor may be required to re-seed the project at no additional cost to the Owner. Mulch shall not be applied in the presence of free surface water, but may be applied upon damp ground. Mulch shall not be applied to snow-covered ground surfaces.

Mulch shall not be applied to areas having a substantial vegetative growth, such as grasses, weeds and grains. Areas not to be mulched shall be determined by the Engineer. Mulching shall not be done during adverse weather conditions or when wind prevents uniform distribution. Application,if after seeding, shall be in a manner to not seriously disturb the seedbed surface. All roadway structures and facilities shall be protected and kept undamaged from application of bituminous material and other operations. Any such material deposited on such structures or facilities shall be removed, at the expense of the Contractor, to the satisfaction of the Engineer.

Additional mulching may be required in accordance with summer erosion control procedures as noted in the Special Provisions.

The Contractor shall remove any equipment tracks on the seedbed prior to final mulching. The Contractor shall use a rake, small harrow or other acceptable means to remove the tracks.

B. APPLICATION OF VEGETATIVE MULCH - Vegetative mulch shall be applied after seeding and fertilizing is completed unless otherwise specified in the Special Provisions. The mulch

shall be applied in a uniform manner by a mulch spreader, at the rate specified in the Special Provisions or Drawings. The mulch spreader shall be designed specifically for this type of work. The vegetative material shall be fed into the mechanical mulch spreader at an even, uniform rate.

When asphalt or a tackifying agent is used as a binder for vegetative mulch, it shall be applied at the rate specified in the Special Provisions or Drawings. It shall be evenly distributed over the vegetative material as it emerges from the blower discharge or it may be hydraulically applied directly following mulch application. Uneven distribution, caused by inadequately powered or improperly adjusted equipment, poor workmanship, erratic material feed or discharge, or similar causes within the Contractor's control, shall be corrected. The quantity of asphalt or tackifying agent specified is subject to increase or decrease as determined in the field by the Engineer.

Straw or native hay shall be uniformly spread at the rate specified on the Drawings, or in the Special Provisions. Unless otherwise specified by the Engineer, straw or hay shall be anchored into the seedbed by using a mulch crimper. Straw or hay shall have a minimum length of 10 incheshall be pliable. If straw breaks during crimping, it shall be sprinkled with water, not soaked, to facilitate placement.

The mulch crimper, specifically designed for this type of work, shall have round, flat (not angled), notched blades of these approximate dimensions: 1/4-inch thick by 18 inches in diameter and spaced 8 inches apart. The crimper shall have sufficient weight to force the vegetative mulch a minimum of 3 inches into the soil and shall be equipped with disc scrapers. Mulch crimping shall be done on all slopes capable of being safely traversed by a tracked vehicle. All mulch crimping shall be done perpendicular to the flowline of the slope.

C. APPLICATION OF FABRICATED MULCH AND FABRICATED NETTING - Fabricated mulch shall be laid on the areas specified on the Drawings or designated by the Owner and securely fastened to the ground by wire staples, wooden pegs, or other satisfactory devices.

D. APPLICATION OF WOOD FIBER MULCH, OR ORGANIC MULCH - Wood fiber mulch or organic mulch shall be applied by means of hydraulic equipment which utilizes water as the carrying agent. A continuous agitator action, that keeps the mulching material and approved additives in uniform suspension, must be maintained throughout the distribution cycle. The pump pressure shall be capable of maintaining a continuous non-fluctuating stream of slurry. The slurry distribution lines shall be large enough to prevent stoppage.

The discharge line shall be equipped with a set of hydraulic spray nozzles which will provide an even distribution of the mulch slurry to the seedbed. Mulching shall not be done in the presence of free surface water resulting from rains, melting snow, or other causes.

The Contractor shall start at the top of the slope and work downward. If necessary, he may be required to use extension hoses to reach the extremities of slopes.

E. FINISHING - Prior to final acceptance of the project, the Contractor shall immediately remulch any area from which the original mulch may have been washed or blown. If the original seedbed and seeding is damaged due to the displacement of the mulching material, the seedbed shall be repaired and reseeded before remulching. The operations described in this paragraph shall be at the Contractor's expense if the damage is due to his negligence.

SUBSECTION 502.00: DEBRIS AND STRUCTURE REMOVAL

502.01 GENERAL

A. DESCRIPTION - This work shall consist of the disposal of all debris and trash specifically including that from previous mining operations as designated on the Drawings and by the Engineer and the disposal of this debris in designated areas. Debris shall be defined as but not limited to the remains of any manmade objects found within the project limits. Debris removal shall also include the demolition and disposal of existing structures as indicated on the Drawings or designated by the Engineer. Structures shall be defined as but not limited to buildings, foundations, fences, abandoned pipe lines, vent pipes, utility facilities, etc. within the project limits.

Some structures may be required to remain completely undisturbed for historical reasons. Such structures will be designated on the Drawings or by the Engineer.

B. SUBMITTALS - The following submittals are required in accordance with the Supplementary Conditions:

- Location of disposal or burning area.
- Authorized burn permits when burning is used.

502.02 MATERIALS

A. COVER MATERIAL - Materials used for cover of debris in embankments or subsidence holes shall be as described in Subsection 220.00, Waste Pile Disposal.

502.03 CONSTRUCTION REQUIREMENTS

A. GENERAL - The Contractor shall gather and dispose of all debris, trash, and structures as specified herein. Disposal may consist of burial, burning, salvaging or off-site disposal of debris, trash, and structures.

B. BURIAL - All non-biodegradable materials such as but not limited to wire, rails, scrap metal, concrete, discarded appliances and vehicles, glass, etc. may be placed in the areas of deepest fill in embankment or subsidence holes as designated by the Engineer, providing the finished work will result in a minimum of 2 feet of cover with suitable backfill material. Crushing of these materials may be required before placing in the burial site.

Burial of large amounts of combustible materials on-site will not be allowed. Burial of small amounts of combustible materials is at the discretion of the Engineer.

C. BURNING - All combustible materials such as, but not limited to, trees, brush, trash, planks, wooden ties, timbers, etc. may be burned on the project site. Burning of materials will be allowed when authorized in writing by the proper fire and air pollution control authorities, provided that all requirements set forth by such authorities are met. Burning of materials will be allowed only if such burning operations can be performed without damage to on-site or adjacent properties. Proposed burning locations must also be approved in writing by the Engineer prior to burning any materials. Burning will not be allowed in adit cuts or subsidence areas where there exists potential for igniting coal or spoils material.

The Contractor shall maintain adequate fire-fighting equipment at the site at all times during any burning. Shovels, rakes, and a water truck equipped with a pump shall be included in the fire-fighting equipment. The Contractor may be required to demonstrate the fire-fighting water pump prior to any burning.

Fires shall be guarded at all times and shall be under constant surveillance until completely extinguished.

The Contractor shall be fully responsible for any damages incurred as a result of any burning operations. A copy of all required permits shall be furnished to the Engineer prior to the start of any burning operations.

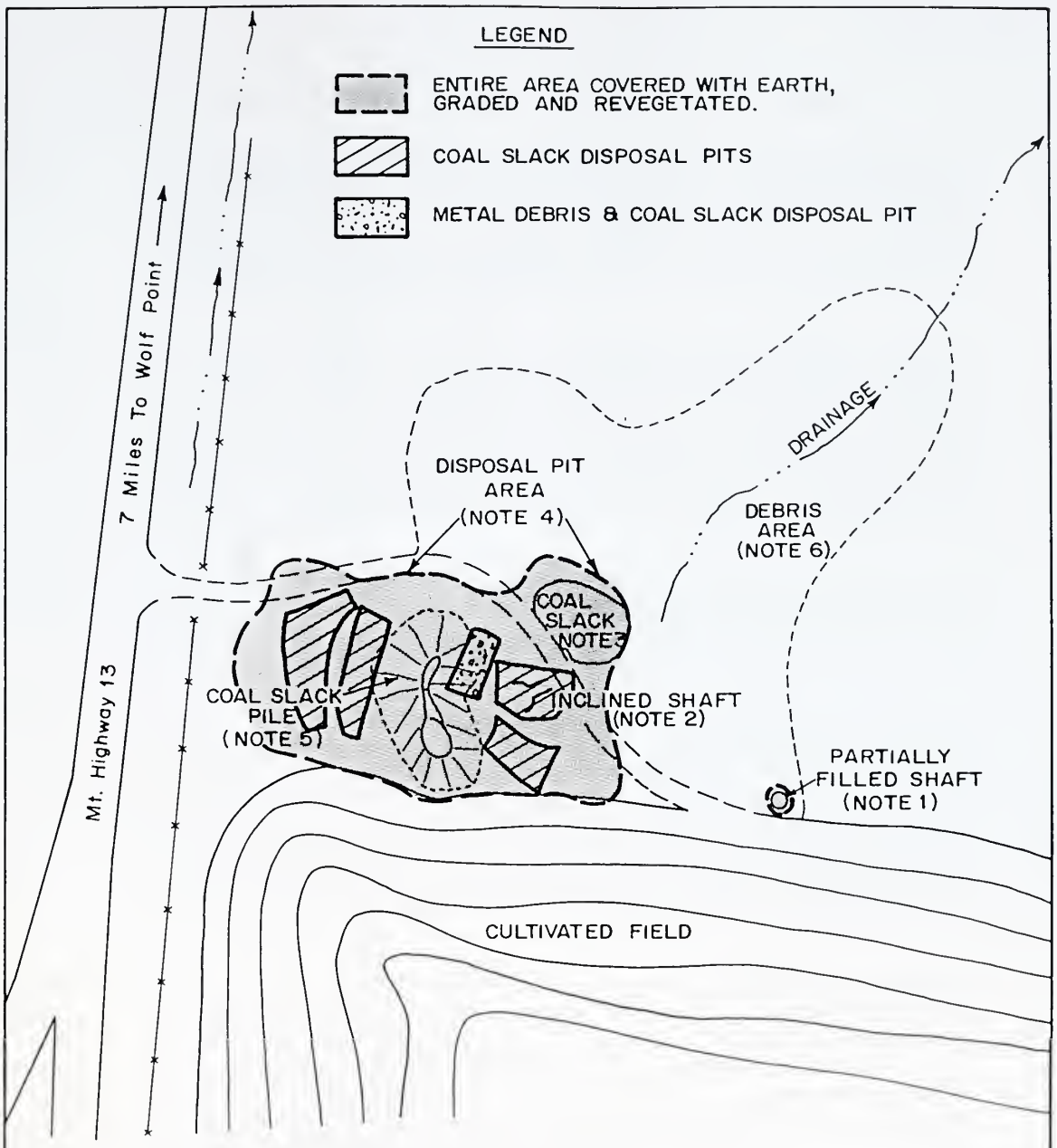
D. SALVAGING - The Owner reserves the right to salvage any mining artifacts, historically significant materials, or other materials discovered at the site. The Contractor shall coordinate with the Engineer for the salvage of such material. Any other salvage not designated by the Owner shall become the property of the Contractor and must be removed from the site or disposed of as specified herein.

All materials denoted to be salvaged shall be carefully moved and stockpiled in the areas designated. All salvaged materials shall be in sections or pieces that can be readily transported. Timber and other wood components shall be neatly stacked on skids. Salvaged materials are not to be used by the Contractor in the course of his work.

E. OFF-SITE DISPOSAL - Any materials which cannot be gathered and disposed of on site by burial, burning or salvaging shall be hauled and disposed of at an approved legal off-site disposal area at no additional cost to the Owner.

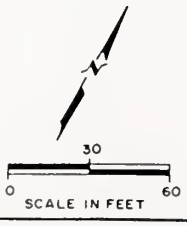
ATTACHMENT 4

AS-BUILT DRAWINGS



HALIBURTON SITE

PROPERTY OWNER: FRANK HANKS, et al.
PHONE: 525-3393



Spectrum Engineering Billings, Montana June 1991	STATE OF MONTANA DEPARTMENT OF STATE LANDS AS-BUILT HALIBURTON SITE DRAWING NO. 2

NOTES ACCOMPANYING HALBURTON AS BUILT DRAWING

NOTE 1: This partially filled shaft was backfilled with material borrowed from the excavation of the inclined shaft. Because the shaft had been almost totally filled with cobble size rock only 4 cubic yards of backfill was required. Consequently, the finished surface was graded as a small mound extending less than 1 foot above the normal grade and sloping to the ground very gently. The finished surface was revegetated per the seeding specifications.

NOTE 2: The contractor removed most of the debris plugging the opening and then began to excavate around the portal to expose the opening. The contractor had hoped to incorporate the mine opening in his disposal pit; but, he found the slope completely closed approximately 25 feet back from the portal and about 15 feet below the surface. This excavation was backfilled with coal slack and earth borrowed from the disposal pit excavations. The earth was mounded over the top and graded to blend with the natural terrain. The fill was revegetated per the seeding specifications.

NOTE 3: This small area (approx. 200 $ft.^2$) which was covered with less than 1 foot of coal slack was partially excavated and then covered with a minimum of six inches of clayey earth borrowed from the disposal pit area. The removed coal slack was placed in a disposal pit. The area was revegetated.

NOTE 4: Two disposal pits with dimensions adequate to accommodate the burial of 400 loose cubic yards of coal slack were dug with a backhoe immediately to the west of the slack pile. Another 50 cubic yard pit was excavated on the east side of the slack pile. After backfilling with coal slack was completed the pits were covered with one to two feet of earth. The contractor attempted to salvage and replace all topsoil covering these areas. However this proved very difficult because the thin layer of soil was generally mixed with slack. The disposal areas were graded to blend with the natural surface. The disturbed area was revegetated per the seeding specifications.

NOTE 5: The coal slack pile, which ranged from 4 to 13 feet in height, was completely excavated. This material was placed in the inclined shaft, in the disposal pits and in the debris disposal pit. The coal slack was pushed into several disposal pits and buried without compaction. A pile of sand was found at the core of the slack pile. This sand and a portion of the clayey earth which had been dug from the disposal pits was spread in a one to two foot layer over the area covering all remaining coal slack. The area where the slack pile had been was revegetated as described in the seeding specifications.

NOTE 6: Debris from the inclined shaft and debris scatter within area outlined in the plans was collected. Metal debris consisting of a car body, a stove, a refrigerator, tin cans, wire, stove pipe, and wash tubs was buried on site and covered with coal slack and earth. The contractor hauled a small amount of wood debris away.

ATTACHMENT 5

PHOTOGRAPHS/SLIDES

PHOTO LISTING

PHOTOS/SLIDES

HALIBURTON PROJECT FINAL REPORT

1	06-10-91	Pre-construction coal slack pile
2	06-10-91	Pre-construction debris is drainage
3	06-10-91	Pre-construction incline filled with debris
4	06-10-91	Pre-construction small area covered with coal slack
5	06-10-91	Pre-construction air shaft filled with rock
6	06-10-91	Contractor's equipment - Case 680E backhoe
7	06-10-91	Contractor's equipment - disk loaded on Chevy truck
8	06-10-91	Excavating along the incline
9	06-10-91	The exposed incline
10	06-10-91	Excavating the coal slack pile
11	06-10-91	Coal slack disposal in the inclined shaft excavation
12	06-11-91	View of the project showing piles of earth from disposal pit excavations around the slack pile
13	06-11-91	Digging the first trench on the west side
14	06-11-91	Pushing coal slack into the first trench
15	06-11-91	Beginning to excavate the second disposal trench
16	06-11-91	Using the backhoe bucket to fill the second trench with slack
17	06-11-91	Pealing off the top of the coal slack pile
18	06-11-91	Load and haul coal slack adjacent to the cultivated field
19	06-11-91	Digging another disposal pit on the east side of the slack pile
20	06-12-91	Hauling debris to the disposal pit
21	06-12-91	Disposal Pit
22	06-12-91	Removing coal slack from the small coal slack area near the incline
23	06-12-91	Spreading earth over the coal slack areas
24	06-12-91	Fertilizing the backfilled air shaft
25	06-12-91	View of the regraded project area looking north from Highway 13

HALIBURTON PROJECT
PHOTO & SLIDE DESCRIPTIONS

ASSIGNED NUMBER	DATE TAKEN	SUBJECT OR COMMENTS
26	06-12-91	Fertilizing
27	06-12-91	Working the fertilized, regraded surface with a disk
28	06-12-91	Seeding the air shaft
29	06-12-91	Seeding the regraded area
30	06-12-91	Mulching
31	06-12-91	View of the draw with debris removed
32	06-12-91	Using the disk to crimp mulch
33	06-12-91	View of the reclaimed area near the incline
34	06-12-91	View of the reclaimed air shaft
35	06-12-91	Looking north at the reclaimed area
36	06-12-91	Looking back toward Highway 13 over the reclaimed area


1


2


3


4

5

6

7

8


9


10


11


12


13


14


15


16


17


18


19


20


21


22


23


24


25


26


27


28


29


30


31


32


33


34


35


36